

M.Sc.(Chem.) Semester - 4 (CBCS) Examination
March/April - 2024 (NEW COURSE)
Heterocyclic Chemistry (Core)

Time: 02:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

- Q.1 (A) Generate the correct Structure from followings IUPAC names. (04)**
- 1) 1*H*-pyrazolo[4,5-*d*]oxazole
 - 2) 1,2,4-triazolo[4,3-*a*]pyridine
 - 3) pyrido[3,2-*g*]quinazoline
 - 4) imidazo[1,2-*b*]isoquinoline
 - 5) 1*H*-furo[3,2-*b*]pyrrole
 - 6) 8-oxa-3-azabicyclo[3.2.1]octane
 - 7) 6-thiaspiro[4.5]dec-9-ene
 - 8) 3-oxa-1-thia-7-azaspiro[4.4]non-7-ene
- Q.1 (B) Answer any Two question out of three. (10)**
- (1) Explain rules for the systematic IUPAC nomenclature of Spiro heterocycles with examples.
 - (2) Give Two synthesis of followings:
 - 1) 1,2-Diazetidine.
 - 2) Oxirane.
 - (3) Discuss chemical reactivity and Two synthesis of Aziridine.
- Q.2 (A) Explain why pyridine is more basic than Pyrrole, provide any one synthesis of Pyrrole. (04)**
- Q.2 (B) Answer any Two question out of three. (10)**
- (1) Describe physical properties and Two synthesis of benzo[*b*]thiophene.
 - (2) Discuss any Two synthesis of followings:
 - 1) Isoindole.
 - 2) Isatin
 - (3) Elaborate Electrophilic reaction and any Two synthesis of Furan.
- Q.3 (A) In Pyridine: Why Nucleophilic attack is more favourable at position-2? (04)**
- Q.3 (B) Answer any Two question out of three. (10)**
- (1) Discuss any Three synthesis of Pyrimidine.
 - (2) Explain any Two synthesis of followings:
 - 1) Phthalazine.
 - 2) Quinazoline.
 - (3) Discuss any Three synthesis of Phenothiazine.
- Q.4 (A) Discuss any Two synthesis of Benzopyran-4-one. (04)**
- Q.4 (B) Answer any Two question out of three. (10)**
- (1) Provide oxidation and reduction products of Quinoline in different conditions.
 - (2) Elaborate any Two synthesis of followings:
 - 1) Acridine.
 - 2) Benzopyran.
 - (3) Describe chemical reactivity and Two preparation of Isoquinoline.
- Q.5 (A) Explain electrophilic reactions and One synthesis of Pyrazole. (04)**
- Q.5 (B) Answer any Two question out of three. (10)**
- (1) Describe any Three synthesis of Oxadiazole.
 - (2) Give Two synthesis of followings:
 - (1) Imidazole.
 - (2) Triazole.
 - (3) Describe Chemical properties and Two preparation of Thiazole.
